

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A method for in vivo flow parameter estimates in magnetic resonance imaging comprising the following steps:

accessing motion-intentional parameterized magnetic resonance imaging data;

providing a magnetic resonance imaging dynamic model function; and,

using conditional probabilities based on Bayes' Theorem to resolve the motion-intentional parameterized magnetic imaging data with respect to the magnetic resonance imaging model for flow across a vessel.

Claim 2 (previously presented): The method as recited in claim 1 further comprising the application of Bayes' Theorem to method of maximum likelihood.

Claim 3 (previously presented): The method as recited in claim 1 further comprising the application of Bayes' Theorem to maximum a posteriori (MAP) method.

Claim 4 (previously presented): The method as recited in claim 1 further comprising the step of comparing probabilities for at least two noise models and determining which noise model of the at least two noise models is better.

Claim 5 (previously presented): The method as recited in claim 4 wherein the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better.

Claim 6 (presently amended): A system for in vivo flow parameter estimates in magnetic resonance imaging comprises:

interface for accessing motion-intentional parameterized magnetic resonance imaging data; and

digital processor for using conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a dynamic magnetic resonance imaging model for flow across a vessel.

Claim 7 (previously presented): The system as recited in claim 6 wherein the digital processor applies Bayes' Theorem to method of maximum likelihood.

Claim 8 (previously presented): The system as recited in claim 6 wherein the digital processor applies Bayes' Theorem to maximum a posteriori (MAP) method.

Claim 9 (previously presented): The system as recited in claim 6 wherein the digital processor compares probabilities for at least two noise models and determines which noise model of the at least two noise models is better.

Claim 10 (previously presented): The system as recited in claim 9 wherein the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better.

Claim 11 (presently amended): An improved magnetic resonance imaging device for in vivo flow parameter estimates comprises:

a magnetic resonance imaging device having a digital processor;

wherein the digital processor uses conditional probabilities based on Bayes' Theorem to resolve ~~the~~ in vivo motion-intentional parameterized magnetic imaging data with respect to a dynamic magnetic resonance imaging model for blood flow velocity, acceleration, turbulence or phase shifts due to flow gradients, across a vessel.

Claim 12 (previously presented): The improved magnetic resonance imaging device as recited in claim 11 wherein the digital processor applies Bayes' Theorem to method of maximum likelihood.

Claim 13 (previously presented): The improved magnetic resonance imaging device as recited in claim 11 wherein the digital processor applies Bayes' Theorem to maximum a posteriori (MAP) method.

Claim 14 (previously presented): The improved magnetic resonance imaging device as recited

in claim 11 wherein the digital processor compares probabilities for at least two noise models and determines which noise model of the at least two noise models is better.

Claim 15 (new): The method as recited in claim 1 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow velocity.

Claim 16 (new): The method as recited in claim 1 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow acceleration.

Claim 17 (new): The method as recited in claim 1 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow turbulence.

Claim 18 (new): The method as recited in claim 1 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow phase shifts due to flow gradients.

Claim 19 (new): The system as recited in claim 6 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow velocity.

Claim 20 (new): The system as recited in claim 6 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow acceleration.

Claim 21 (new): The system as recited in claim 6 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow turbulence.

Claim 22 (new): The system as recited in claim 6 wherein the motion-intentional parameterized magnetic imaging data corresponds to blood flow phase shifts due to flow gradients.